

SOME NEW LAURENCIAE FROM SOUTHERN CALIFORNIA

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For many years the genus *Laurencia* has been troublesome for collectors of algae along the California coast because of an unwillingness among specialists to tackle the difficulties of the genus and to name the various entities found in the region. Consequently these algae have received only vague designation under names of species mostly of European habitat. In southern California the very distinctive *Laurencia subopposita* has long been the only species clearly understood (3, p. 221, pl. 15, fig. b). The species now known as *L. pacifica* (2, p. 42, fig. 38) was designated under a number of misnomers until very recent years. Of the three species described here, *L. diegoensis* has gone under the name of the more northern *L. spectabilis*. *L. Maxineae* and *L. scrippsensis* seem to be poorly represented in collections, and rarely named at all. The species from the vicinity of La Jolla generally designated as *L. papillosa* is another plant in need of further study. It does not occur, however, during the fall or winter seasons, and an examination of a good series of specimens has not been possible up to the time of this writing.

Acknowledgements are due to Dr. H. L. Mason of the Herbarium of the University of California for the loan of specimens, and to Dr. C. K. Tseng for helpful suggestions during the course of this study.

Laurencia Maxineae is named for my wife who aided in the collection and study of these plants; *L. scrippsensis*, for the Scripps Institution of Oceanography near which the specimens were first discovered; and *L. diegoensis*, for San Diego County, the shores of which it inhabits.

The type specimens are deposited in the Herbarium of the University of California, Berkeley.

***Laurencia Maxineae* sp. nov.** Thalli 3–6 cm. alti, fusco-rubri; surculis erectis compressis, bipinnatis et cum ramis in uno plano orientibus; axibus principibus 1.5 mm. latis, 200–350 μ crassis; cellulis superficialibus cubicis, 20–25 μ diam.; cellulis medularibus 50–60 μ diam., sine tumoribus lenticularibus; ramulis spermatangialibus ovatis, 1 vel 2 cornutis; tetrasporangiis simplicibus, in ramulis ultimis, sine nodosis lateralibus; cystocarpis ovatis.

Thalli 3–6 cm. tall, reddish-brown, flexible, delicate; erect shoots one to a few from a small attachment to the host, more or less regularly pinnately to bipinnately branched in one plane; terete below, compressed above; main axes 1.5 mm. broad, 200–350 μ thick; surface cells more or less isodiametrical, 20–25 μ diam.; medullary cells 50–60 μ diam., without lenticular thickenings; spermatangial branchlets ovate, solitary on ultimate

branches, commonly with one or two horn-like lateral projecting knobs; tetrasporic stichidia simple, very much like sterile ultimate branchlets, without lateral knobs; cystocarps of variable size and irregular arrangement, ovate, 1 to 3 lateral or terminal on the pinnae (pl. 26, fig. 2; pl. 25, fig. 3; pl. 28, figs. 4, 5).

Type. Epiphytic on *Corallina*, tide pools in the lower littoral, reef near Scripps Pier, La Jolla, California, November 22, 1943, Dawson 43-157 (Herb. Univ. Calif. no. 685719).

The small size, delicate nature and fine-pinnate branching of this species distinguishes it from other *Laurencia* species of the California coast. It is distinguished from *L. splendens* (1, p. 219) by its smaller size and finer and less regular branching. In all proportions it is about one-half the size of *L. splendens*. Reproductive differences cannot be pointed out, since *L. splendens* was described from sterile material.

Laurencia Maxineae has been found, other than at the type locality, two miles farther south, on the reef near the "Beach Club," on La Jolla Bay. It grows not only on *Corallina*, but on *Gelidium* and other red algae, on wave dashed littoral rocks at or below mean low tide line. It is not a common plant, but when exactly the right habitat is found in the extreme lower littoral, where rather thick growths of *Corallina* occur, it may be encountered fairly frequently, growing on old plants of that genus.

Laurencia scrippsensis sp. nov. Thalli 10-16 mm. alti, fuscorubri, caespitosi; surculis compressis, 1.0-1.5 mm. latis, 400-500 μ crassis, pinnatis, cum ramis in uno plano; cellulis superficialibus 20-30 μ diam., cubicis, vallum non formantibus; cellulis medullaribus 70-90 μ diam., sine tumoribus lenticularibus; cystocarpiis conspicue tumulentibus; tetrasporangiis in pinnatis immutatis paene; ramulis spermatangialibus ovatis.

Thalli epiphytic, 10-16 mm. high, deep reddish-brown, composed of several spreading, or contorted and caespitosely congested shoots arising from the point of attachment to the host, the shoots compressed, 1.0-1.5 mm. broad, 400-500 μ thick, irregularly alternate-pinnately branched in one plane; surface cells more or less isodiametric, 20-30 μ diam., not forming a palisade layer; medullary cells 70-90 μ diam., without lenticular thickenings; cystocarps forming promiscuous bulges on highly irregular branched shoots; tetrasporangial plants more regularly pinnate, less densely branched and with sometimes more strongly, sometimes less strongly compressed shoots; tetrasporangia borne in essentially unmodified pinnae; spermatangial branchlets broadly

EXPLANATION OF THE FIGURES. PLATE 26.

PLATE 26. SOUTHERN CALIFORNIA LAURENCIAE. FIG. 1. *L. diegoensis*: mature spermatangial specimen in first year of development (from type collection), $\times 1$. FIG. 2. *L. Maxineae* attached to *Corallina*: a, spermatangial plant; b, tetrasporic plant. (From type collection), $\times 1\frac{1}{2}$. FIG. 3. *L. scrippsensis*: almost mature cystocarpic plant (from type collection), $\times 1\frac{1}{2}$.

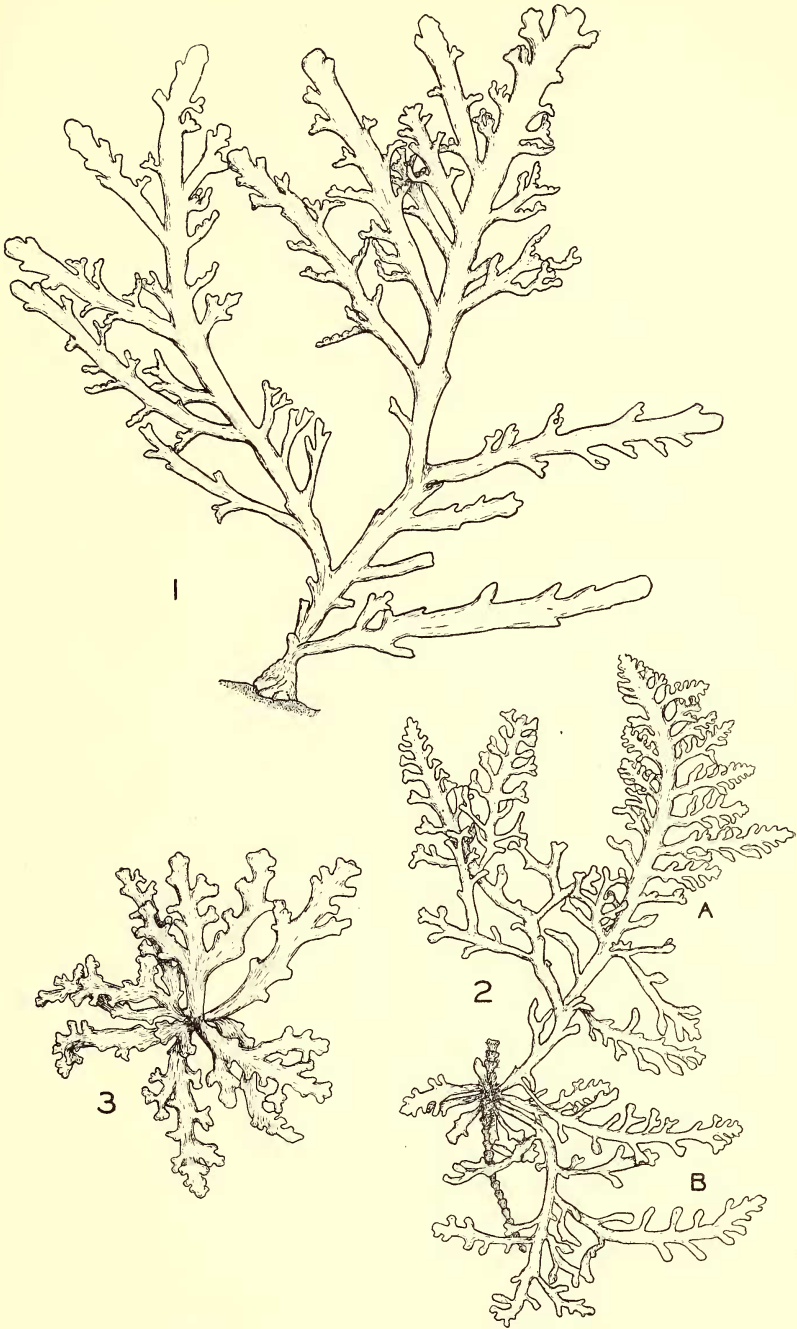


PLATE 26. SOUTHERN CALIFORNIA LAURENCIAE.

ovate to nearly urn-shaped, usually solitary or in pairs in very short pinnae given off from the compressed shoots (pl. 26, fig. 3; pl. 27, figs. 1, 2, 4).

Type. Epiphytic on *Sargassum Agardhianum*, in pools in the lower littoral, on the reef near Scripps Pier, La Jolla, California, November 22, 1943, Dawson 43-158 (Herb. Univ. Calif. no. 685720).

The small size, caespitose growth form and epiphytic habit of this species distinguish it from all other compressed species of *Laurencia* thus far described from the Pacific American coast. It is a very abundant small plant and on some wave-swept rock platforms at La Jolla it grows in dense, fleshy, closely adherent, caespitose clumps, almost covering the underlying host plants. In shaded places or in pools it has a less contorted and a more openly branched habit.

Laurencia diegoensis sp. nov. Thalli 8-20 cm. alti, fusco-rubri; surculis erectis compressis, irregulariter bipinnatis, elongatis cum brevioribus mixtis; ramis in uno plano orientibus; ramis principibus 2-3 mm. latis, 0.5-0.8 mm. crassis; cellulis superficialibus cubicis, 20-30 μ crassis, vallum non formantibus; cellulis medullaribus 80-100 μ crassis, sine tumoribus lenticularibus; ramulis spermatangialibus bulbosis, 1 ad 4 in ramis ultimis brevis; cystocarpiis bulbosis, 2 ad 5 in fasciculis terminalibus; tetrasporangiis compositis, subteretis.

Thalli 8-20 cm. tall, deep reddish-brown; composed of a conic holdfast and erect, strongly compressed shoots; branching irregularly alternate-bipinnate, all in one plane; branches of different orders of irregular length, giving the frond an unsymmetrical appearance; main branches 2-3 mm. broad, 0.5-0.8 mm. thick; surface cells more or less isodiametric, 20-30 μ diam., not forming a palisade layer; medullary cells 80-100 μ diam., without lenticular thickenings; spermatangial branchlets bulbous, borne singly or in groups of 2 to 4 along short ultimate branches; cystocarps bulbous, borne in terminal clusters of 2 to 5 on short ultimate branches; tetrasporangial stichidia compound, the parts rather slender and nearly terete (pl. 26, fig. 1; pl. 28, figs. 1, 2, 3).

Type. On rocks between the 1.0 and 0.0 foot tide levels, reef near Scripps Pier, La Jolla, California, November 22, 1943, Dawson 43-156 (Herb. Univ. Calif. no. 685722).

Other collections seen. CALIFORNIA. Orange County: Balboa, Gardner 2498; Laguna Beach, Fosberg T193, Guernsey LXV. Los Angeles County: Santa Monica, Gardner 2580. San Diego County:

EXPLANATION OF THE FIGURES. PLATE 27.

PLATE 27. SOUTHERN CALIFORNIA LAURENCIAE. FIG. 1. *L. scrippsensis*: portion of a cystocarpic plant, $\times 5$. FIG. 2. *L. scrippsensis*: portion of a tetrasporic plant, $\times 9$. FIG. 3. *L. Maxineae*: portion of a spermatangial plant, $\times 9$. FIG. 4. *L. scrippsensis*: portion of a spermatangial plant, $\times 9$.

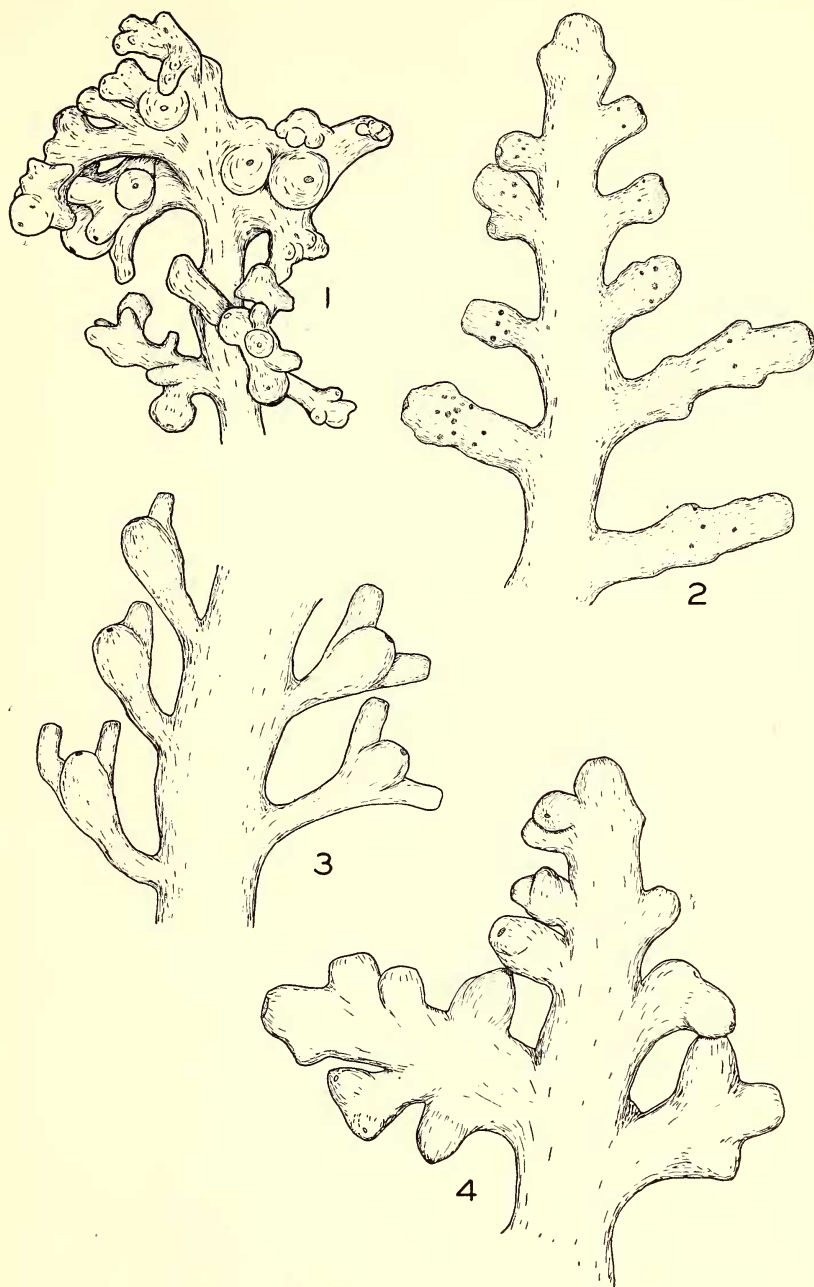


PLATE 27. SOUTHERN CALIFORNIA LAURENCIAE.

vicinity of San Diego, *Wright* (Herb. Univ. Calif. no. 94427); La Jolla, *Snyder* (Herb. Univ. Calif. no 77965), *Dawson* 43-160.

The species is perennial. Figure 1 (pl. 26) is of a small, mature, spermatangial plant in the first year of development.

Many plants in their second year of growth have been found at La Jolla in reproductive state. They are of the same branching proportions as the smaller plants, but are more or less denuded of branches in the lower parts and are encrusted to varying degrees with bryozoans and melobesiae.

In looking over a collection of some thirty specimens labeled *Laurencia spectabilis* in the University of California Herbarium, a number of specimens were found to correspond with those collected by the author in the San Diego region. Furthermore, it was found that the specimens could all be separated into two quite distinct morphological groups. These two groups exhibited geographical separation as well. The first group, here considered to be true *L. spectabilis*, is composed of collections ranging from Whidbey Island, Washington, to Santa Barbara, California. The other group, *L. diegoensis*, contains examples from Santa Monica, Balboa, Laguna Beach, La Jolla, and San Diego, California.

The southern plants are all of narrower proportions. Conspicuously broad or expanded main axes are not present in *Laurencia diegoensis*. Most striking, in comparing series, is the prevalence in *L. spectabilis* of regular branching. The branches of the various orders are typically of uniform length, and this is particularly true of the small, ultimate branchlets which are especially uniform, gradually reduced in size toward the growing apices. This uniformity is conspicuously absent in *L. diegoensis* in which the rate of growth of the branchlets is variable and even in the young stages creates an irregular and unsymmetrical branch pattern.

The geographical distribution seems reasonably well defined, with a region between Santa Barbara and Santa Monica marking the southern limit of *L. spectabilis* and the northern limit of *L. diegoensis*. Intensive study of plants growing in this region will undoubtedly bring out details of intergradation and divergence of the two closely related species.

Laurencia diegoensis differs from *L. splendens* (1, p. 219, fig. 24) in being generally a larger plant and in not being epiphytic. It is superficially similar to *L. pinnata* (3, p. 242, pl. 28) but may be distinguished specifically by the tetrasporic stichidia which in *L.*

EXPLANATION OF THE FIGURES. PLATE 28.

PLATE 28. SOUTHERN CALIFORNIA LAURENCIAE. FIG. 1. *L. diegoensis*: portion of a spermatangial plant, $\times 5$. FIG. 2. *L. diegoensis*: portion of a cystocarpic plant, $\times 5$. FIG. 3. *L. diegoensis*: portion of a tetrasporic plant, $\times 5$. FIG. 4. *L. Maxineae*: portion of a tetrasporic plant, $\times 7$. FIG. 5. *L. Maxineae*: portion of a cystocarpic plant, $\times 7$.

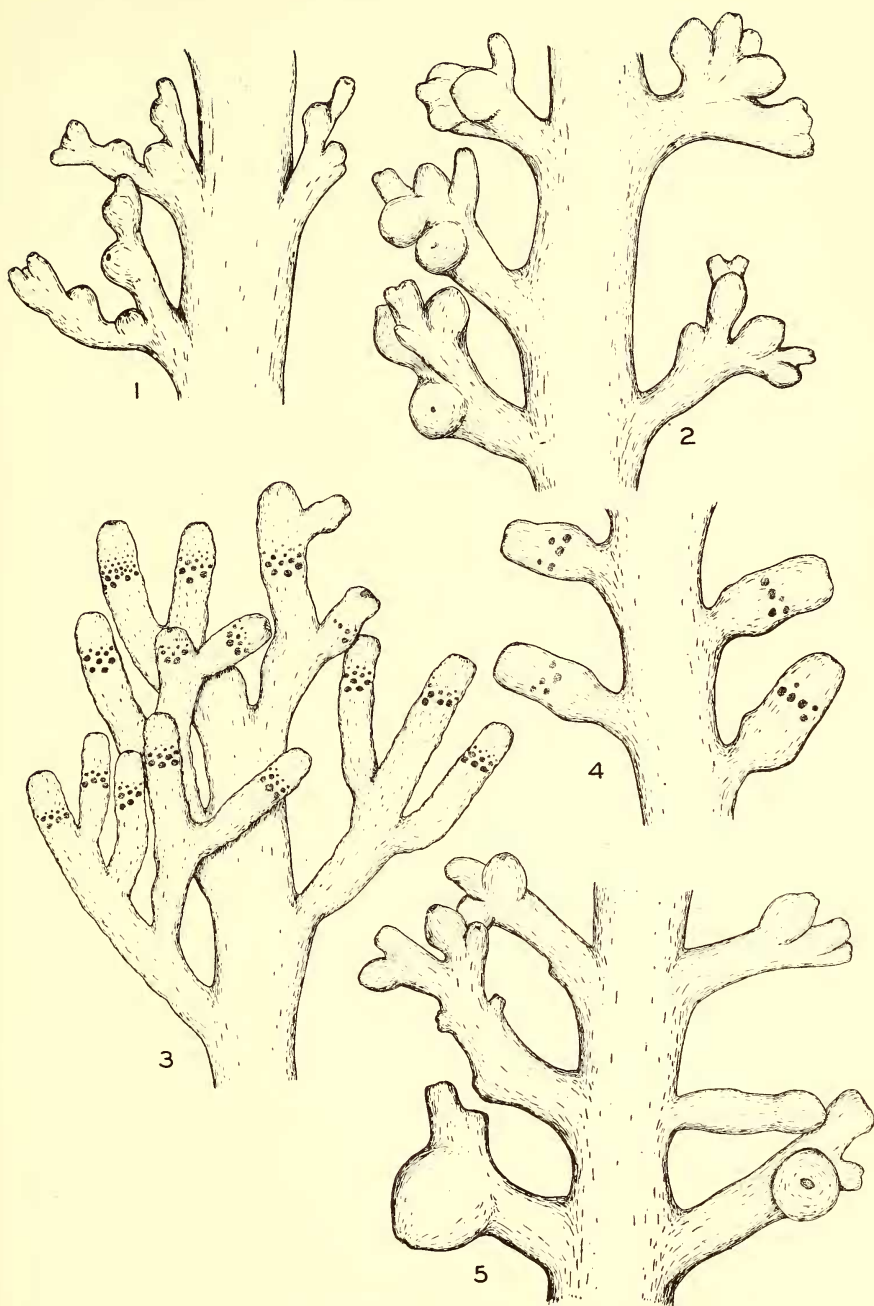


PLATE 28. SOUTHERN CALIFORNIA LAURENCIAE.

pinnata are described as occurring in the "similar ultimate branchlets." In *L. diegoensis* the compound, terete stichidia are quite unlike the vegetative branches. Yamada (3, p. 246) has pointed out the distinctions between *L. spectabilis* and *L. pinnatifida*, particularly the presence of abundant lenticular thickenings in the latter species. He recognized the presence of a broader and a narrower plant under the name *L. spectabilis*, but did not distinguish them specifically.

Scripps Institution of Oceanography,
University of California, La Jolla,
December, 1943.

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NOMINA CONSERVANDA PROPOSALS FOR TEN GENERA OF TREES AND SHRUBS

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While checking the nomenclature of the forest trees of the United States, I observed that ten generic names of trees and large shrubs now in almost universal use are technically invalid or of questionable validity under the latest International Rules of Botanical Nomenclature (ed. 3, 152 p. 1935. Sixth Internat. Bot. Cong. Amsterdam, Proc. 2 vol. 1935-36). These well-known names are: *Cedrus* Trew, *Abies* Mill., *Coccoloba* P. Br. ex L., *Rhacoma* L., *Condalia* Cav., *Fremontia* Torr. (1853), *Pilocereus* K. Schumann, *Cephalocereus* Pfeiff., *Bucida* L., and *Halesia* Ellis ex L. The nomenclature of each is discussed here, and it is suggested that these names be submitted at the next International Botanical Congress as *nomina generica conservanda proposita*. To reject these names would cause confusion by requiring a few new generic names and more than a hundred specific transfers. All these names have been adopted in my manuscript, "Check List of the Native and Naturalized Trees of the United States," with the exception of the genera *Cedrus* and *Pilocereus*, which were outside the scope of that paper. As it seems likely that most of these names will be conserved later, there will be more stability in nomenclature by using these well-established names.

"Index Londonensis" (6 vols. 1929-31; Suppl. 1941), an index to illustrations of plants, shows that usage is strongly in favor